5.7 (old 3.13.7) Follow-up of Hemoglobin Results-Transfusion Indicated on the TRF with Hemoglobin Patterns containing S, C, D, E, Variant, or Bart's

GENERAL INFORMATION: Because of transfusion, results are not clearly interpretable. **There is a possibility that the transfusion masks a hemoglobinopathy**. **Follow-up hemoglobin testing is mandatory**. DNA testing on a confirmatory sample from the baby, and parent testing at Children's Hospital & Research Center at Oakland (CHRCO) Hemoglobin Reference Laboratory is required to rule out a hemoglobinopathy.

NOTE: Although the Interpretation that appears on the Case Summary screen in SIS for these cases is "Variant", the interpretation on the results mailer to the hospital and physician is "Because of transfusion, no interpretation possible." The "Follow-up Hb" section below the test results on the mailer reads: "Confirmatory testing is required to rule out a hemoglobinopathy. Call your Newborn Screening Coordinator for assistance (see below)."

PROTOCOL:

Resp. Person	Action
NBS ASC Coord.	• **Daily** Reviews the Headline Case Report in SIS for cases with the **NBS HB Test Interpretation of "Variant".** These are results from infants who have transfusion prior to the NBS collection indicated on the TRF, and whose hemoglobin pattern contains S, C, D, E, V, or Bart's. • Searches NBS computer database to ascertain if baby had been screened earlier, prior to transfusion. If this is the case, and results are not positive for a hemoglobinopathy, no further testing is indicated. In SIS, links the pre- and post transfusion cases. • **Within 48 hours**, verifies the birth date, birth time, collection time, and transfusion status, including the possibility of an intrauterine transfusion. If transfusion occurred, notes date(s), time(s), and types of transfusion(s). Corrects information as needed in the Case Summary in SIS and enters Case Notes. • If it is determined that the baby **was not transfused (TRF incorrect),** corrects the information in the Case Summary in SIS and calls the NBSB Lab Results Monitor to correct the baby data record. Sends a corrected mailer and enters Case Notes in SIS. No further action by the NBS ASC Coordinator is needed. • If it is determined that the baby **was transfused (i.e.,TRF is correct)** prior to collection, contacts the physician to inform him/her of the possibility that the infant has a hemoglobinopathy and that further testing is required to rule out a hemoglobin disorder.

	• Assists primary care provider (PCP)/nursery in making arrangements to have whole blood specimen on the infant and both parents (if possible) collected to be sent to CHRCO for DNA testing for hemoglobinopathies. • Provides the collection site with *Instructions for Collection, Handling, and Mailing of Confirmatory Blood Specimens,* Lab Intake form (5.8), and shipping materials (including GSO label and shipping cylinder). **Includes on lab intake form the blood products with which baby was transfused, e.g., whole blood, packed red blood cells and date/time of last transfusion.** Asks lab to fax the intake form to the ASC after the blood is collected. • Sends **Doctor Letter #36** (Section 11.1) to the PCP. • Documents all attempts at notification, interactions with physicians and parents using tracking events and case notes in SIS. • If the baby has signs or symptoms of anemia or hemoglobinopathy, assists with referral to a CCS Sickle Cell Disease Center (SCDC). • **Monitors cases weekly for receipt of specimens by the Hemoglobin Reference Lab**; if notification of receipt is not received in two weeks, checks GSO shipping records or calls CHRCO lab to inquire if specimen was received. If it wasn't, calls nursery/PCP regarding the blood collection and requests that PCP inform the coordinator if/when specimen is collected.
Hb Reference Lab (CHRCO)	• Conducts confirmatory testing on liquid blood specimen(s). • **Within 11 working days** enters results in SIS and informs the ASC NBS Coordinator of the confirmatory test results (initial analysis) by fax, followed by a hard copy sent to the ASC NBS Coordinator and NBSB Hemoglobin Coordinator. Includes the following results: a. Separation of hemoglobins F, A, S, C, D, and E with relative concentrations for each hemoglobin on all specimens by cellulose acetate-citrate agar electrophoresis, isoelectric focusing, high pressure liquid chromatography, and/or DNA analysis as outlined in the Hb Reference Lab NBS vendor agreement scope of work or as approved by the NBSB. b. Hemogram on each suitable specimen which includes hemoglobin, hematocrit, mean corpuscular volume (MCV) and mean corpuscular hemoglobin (MCH). c. Free Erythrocyte Protoporphyrin (FEP) on specimens with microcytic hypochromic anemia. d. Quantitative A2 when necessary to resolve phenotype. e. Quantitative F when necessary to resolve phenotype. • **Within 31 calendar days of initial results,** enters results in SIS and reports out the following: a. DNA analysis to determine the infant's hemoglobin type. b. Presumptive findings for unusual Hb variants such as: Hb Korle Bu, Hb T Cambodian, Hb Matsue-Oki, Hb O Arab, Hb C Harlem, Hb G Philadelphia.

5.7 Follow-up of Hemoglobin Results-Transfusion Indicated on the TRF with Hemoglobin Patterns Containing S, C, D, E, or Variant

	• **Within 91 calendar days of initial results**, enters results in SIS, faxes and mails reports on: a. Final determinations for unusual Hb variants such as Hb Korle Bu, Hb T Cambodian, Hb Matsue-Oki, Hb O Arab, Hb C Harlem, Hb G Philadelphia. b. Analysis of rare variants carried in compound heterozygosity with clinically significant hemoglobinopathies.
NBS ASC Coord.	• Phones the PCP with confirmatory test results. • **If baby is found to have a hemoglobinopathy**, follows protocol specific to the pattern. • **If the results are negative**, sends the lab reports with **Doctor Letter #37A or 37B + C** to the PCP. • **If the results indicate a hemoglobin trait**, sends the appropriate **doctor letter (#38-44)** and a pamphlet about the trait for the PCP to share with the family. Includes the toll-free Hemoglobin Trait Follow-up Program Number for babies identified with Sickle Cell Trait, Hb C Trait or Hb D Trait. For other traits identified (unidentified Variant, alpha or beta thalassemia, or E) the parents can be referred to a Sickle Cell Disease Center or genetic counselor for counseling about the trait. • Enters tracking events, case notes, and resolves case in SIS. If DNA testing shows the Hb type for the baby is FA, resolve as “No Disorder”. Case resolution for hb traits is “Carrier” with a note in “Comments” about the trait that was identified. • Reports any missed cases, lost to follow-up cases, delays in contacting nursery/physician or other unusual occurrences of potential significance to the NBSB Nurse Consultant. • Reports delays in analysis or reporting of confirmatory results or questions about confirmatory results to the NBSB Hemoglobin Coordinator.